

(12) **UK Patent Application** (19) **GB** (11) **2 367 535** (13) **A**

(43) Date of A Publication 10.04.2002

(21) Application No 0024171.1

(22) Date of Filing 03.10.2000

(71) Applicant(s)
Autoliv Development AB
(Incorporated in Sweden)
Patent Department Sweden, S-447 83 Vargarda,
Sweden

(72) Inventor(s)
Yann Delginy

(74) Agent and/or Address for Service
Forrester Ketley & Co
Forrester House, 52 Bounds Green Road, LONDON,
N11 2EY, United Kingdom

(51) INT CL⁷
B60R 21/02 21/16

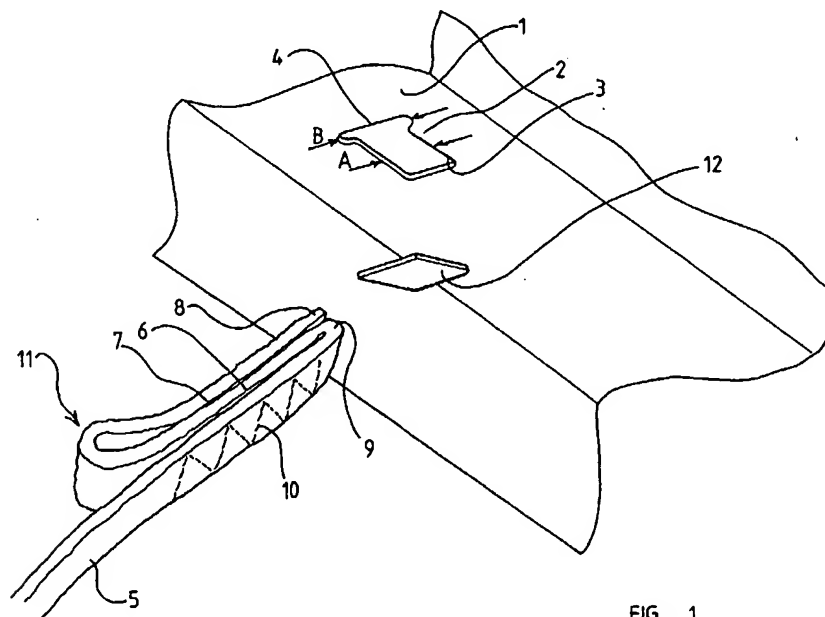
(52) UK CL (Edition T)
B7B BSBCC BSBCR
A4X X5

(56) Documents Cited
None

(58) Field of Search
UK CL (Edition S) **A4L LBEJ LBEQ , A4X X1 X5 X6 ,**
B7B BSBCC BSBCR
INT CL⁷ **B60R 21/02 21/16**
WPI, EPODOC, JAPIO, INTERNET

(54) Abstract Title
A strap connection

(57) A strap fixing comprises a strap (5) and an aperture (2) formed in part of a motor vehicle. An end part of the strap is folded over twice (6, 7) and is then stitched (10) to form a second end region. The aperture has a first region (3) dimensioned to permit the end part of the strap to be inserted through the aperture. The aperture defines a second region (4) designed snugly to accommodate and retain the flat strap. If force is applied to the strap tending to withdraw the strap from the aperture when the strap is in the second region (4), the strap will be retained within the second region and the end part of the strap will engage the periphery of the aperture.



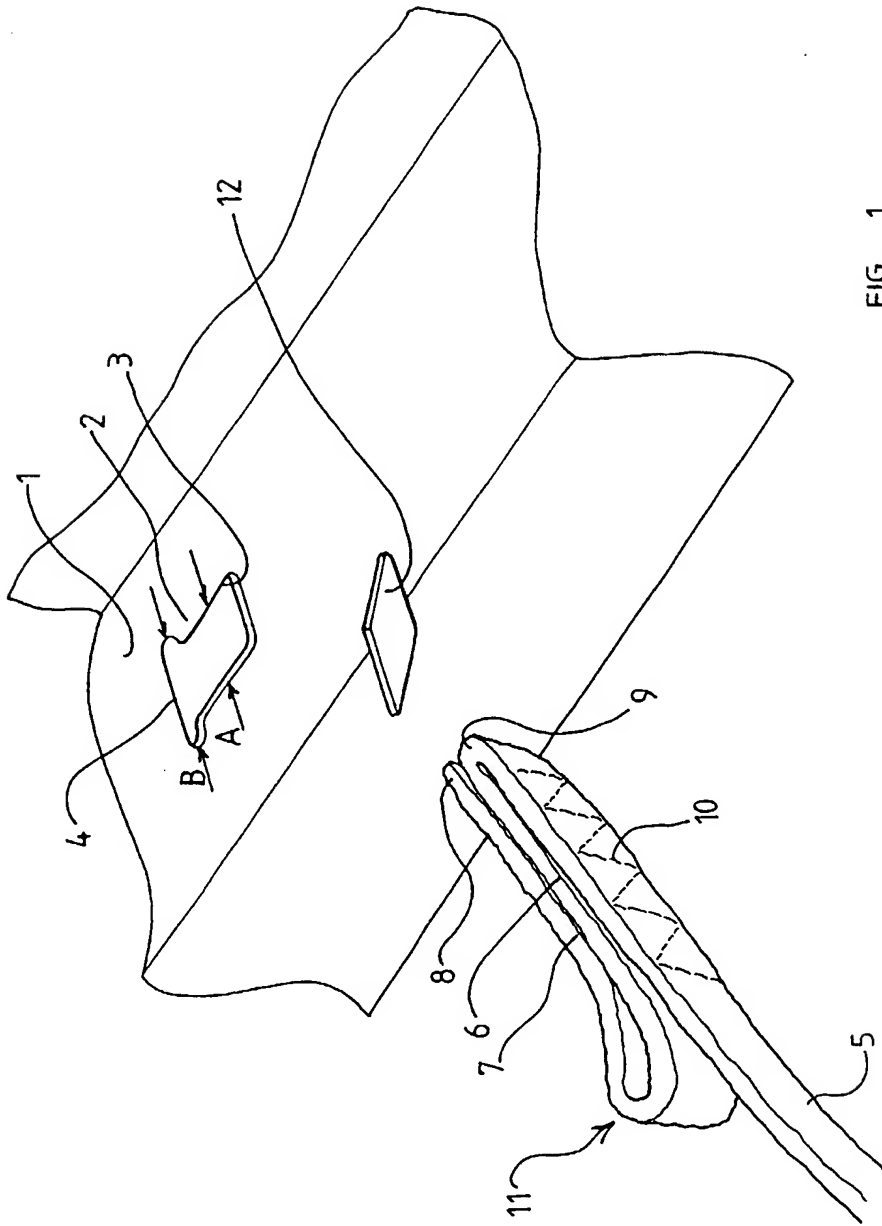


FIG. 1

FIG 2

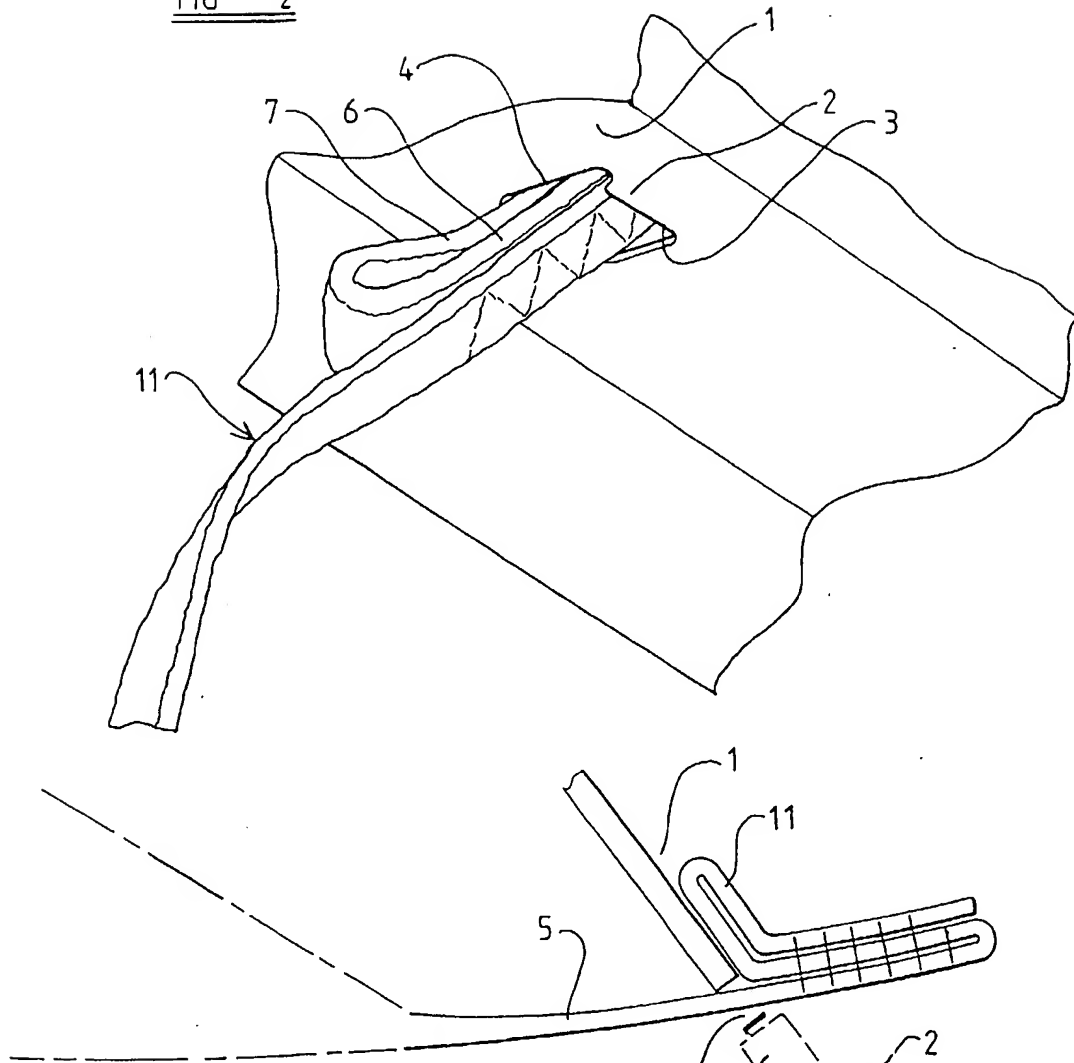
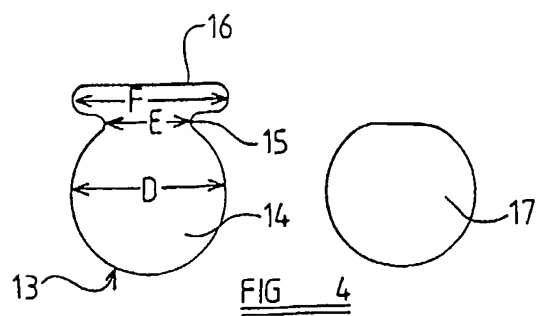
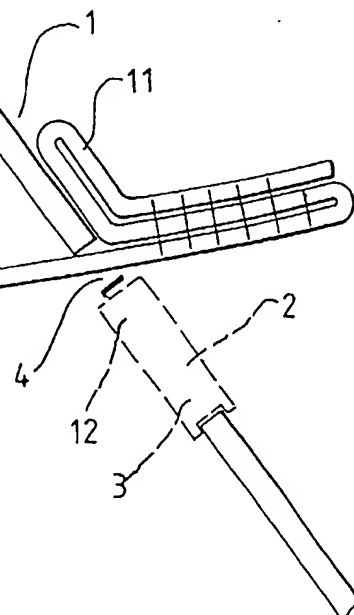


FIG 3



PATENTS ACT 1977

P14716GB-NF/jsd

DESCRIPTION OF INVENTION

“IMPROVEMENTS IN OR RELATING TO A STRAP CONNECTION”

THE PRESENT INVENTION relates to a strap connection and, more particularly, relates to a strap connection between an end part of a strap and part of a motor vehicle.

It is often necessary to connect an end part of a strap to part of the body of a motor vehicle. One example of where a strap connection of this type is required is with an inflatable element in the form of an inflatable side curtain such as that shown in GB-A-2,297,950.

It has been proposed previously to mount straps on a motor vehicle using mounting plates, bolts or hooks. The present invention seeks to provide an improved strap connection.

According to one aspect of this invention there is provided a strap fixing comprising a strap and an aperture formed in part of a motor vehicle, the strap comprising a substantially flat strap having a terminal part folded over at least once to create an end region comprising at least two adjacent layers of strap, the said adjacent layers of strap being permanently fixed together at least over a part of the region in which they are adjacent, the aperture having a first region

dimensioned to permit the end part of the strap to be inserted through the aperture, the aperture defining a second region dimensioned to accommodate and retain the flat strap so that, if a force is applied to the strap tending to withdraw the strap from the aperture, when the strap is in the second region, the strap will be retained within the second region and the end part of the strap will engage the periphery of the aperture.

Preferably the end of the strap is folded over twice to create said end part, the end part thus having three layers of strap.

Conveniently the adjacent layers of strap are permanently fixed together by stitching. Alternatively the adjacent layers may be welded or adhered together.

Preferably the said adjacent layers are permanently fixed together only over a part of the overlying surface to define a free tab adjacent the main part of the strap, the free tab being adapted to be the component of the end part to engage the periphery of the aperture.

Conveniently said region is connected to the rest of the aperture by a zone having a width less than the width of the strap.

Advantageously a cover is provided adapted to cover the part of the aperture not occupied by the strap when the strap is in the second region. The cover may be a snap-in cover adapted to be snapped into the part of the aperture not occupied by the strap. The cover may completely cover this part of the aperture, or may partially cover this part of the aperture.

Preferably the strap is connected to an inflatable element in the form of an inflatable side curtain.

Conveniently the aperture is formed in the A-Pillar of the car body.

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, the invention will now be described, by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view illustrating part of a motor vehicle, and an end portion of a strap in a first relative position,

FIGURE 2 is a view corresponding to Figure 1 illustrating the end portion of the strap being inserted through an aperture,

FIGURE 3 is a sectional view through the aperture showing a final condition of the strap, and

FIGURE 4 is a diagrammatic view of an alternate form of aperture.

Referring initially to Figure 1 of the accompanying drawings, an A-Post of a motor vehicle is illustrated. An aperture 2 is formed in the A-Post of a motor vehicle. The aperture includes a first region 3 shown to be of generally rectangular form having a predetermined width "A". One end of the rectangular region 3 is enlarged, to form the terminal region 4 which has an enlarged width "B".

A strap 5 is illustrated in the form of a webbing strap. The webbing strap has a predetermined width and a predetermined thickness. The terminal region of the strap 6 has been folded back to lie adjacent the main body part of the strap, and the end part 7 of the terminal region has been folded back to lie adjacent the rest of the terminal region. Thus, the end part of the strap comprises three thicknesses of strap, with the very end 8 of the strap substantially aligned with a bend 9 between the main body of the strap and the folded back terminal region 6 of the strap.

A substantial portion of this region where three thicknesses of strap is provided is stitched together by means of stitching 10. However, the stitching 10 does not cover the whole of the region, and thus a certain length of the super-imposed terminal region 6 and the end part 7 thereof, as indicated by the reference 11, lies adjacent the main strap, but is not stitched thereto.

The width "A" of the aperture 3 is selected so that the illustrated end part of the strap 5 may be inserted into the aperture 2 in one orientation with the width of the strap being transverse to the width of the aperture.

The width "B" is selected to be slightly greater than the width of the main body of the strap 5. The width "A" is selected to be less than the width of the main body of the strap 5. The terminal region 4 of the aperture 2 has a section which is slightly larger than the cross-section of the main body of the strap 5.

A snap-in cover 12 is provided, dimensioned to be snap-fitted into the main region 3 of the aperture 2.

The strap 5 may be connected to part of an air-bag or inflatable element 13. The inflatable element is preferably an inflatable element that can form a side curtain in a motor vehicle. GB-A-2,297,950 provides a description of examples of inflatable elements that can form side curtains.

Referring to Figure 2, it can be seen that the end part of the strap 5 is being inserted into the aperture 2. When the entire part of the strap that has three thicknesses has been inserted into the aperture, the main body of the straps may be manipulated so as to lie solely within the terminal region 4 of the aperture 2. The region 4 is dimensioned to accommodate simply the single thickness of strapping that forms the main body of the strap 5. If there is any tendency to withdraw the strap 5 from the aperture 2, the tab 11 will engage the part of the A-Post defining the periphery of the aperture 2, as shown in Figure 3, thus preventing the end of the strap from being withdrawn from the aperture 2. Thus the strap 5 may extend tightly from the A-Post 1 to an inflatable element, such as the inflatable element shown in phantom in Figure 3. The strap 5 will not tend to pass into the rectangular region 3 of the aperture, since the part of that region 3 adjacent the terminal region 4 has a width less than the width of the strap 5.

When the strap 5 is in position, the snap-in cover may be snapped in position which will ensure that the strap stays in place. The cover 12 is shown in position in phantom in Figure 3.

Whilst the invention has been described with reference to an embodiment in which a particular shape of aperture has been provided, Figure 4 illustrates an alternative aperture 13. The aperture 13 has a first region 14 of generally circular form having a diameter D sufficient to enable the end of a strap, such as the strap 5 shown in Figure 1, to be inserted into the

aperture. The region 14 is separated by a relatively narrow neck 15, having a width E, from a further region 16 having a width F. The width F of the region 16 is selected to be greater than the width of the single webbing that forms the main part of the strap 5, and the region 14 thus corresponds with the region 4 of the aperture 2 being dimensioned to snugly receive one thickness of the strap that forms the main body of the strap 5. The width E is less than the width of the strap. A snap-in cover 17 may be provided to be snapped into the region 14.

In the present specification "comprise" means "includes or consists of" and "comprising" means "including or consisting of".

The features disclosed in the foregoing description, or the following Claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS:

1. A strap fixing comprising a strap and an aperture formed in part of a motor vehicle, the strap comprising a substantially flat strap having a terminal part folded over at least once to create an end region comprising at least two adjacent layers of strap, the said adjacent layers of strap being permanently fixed together at least over a part of the region in which they are adjacent, the aperture having a first region dimensioned to permit the end part of the strap to be inserted through the aperture, the aperture defining a second region dimensioned to accommodate and retain the flat strap so that, if a force is applied to the strap tending to withdraw the strap from the aperture, when the strap is in the second region, the strap will be retained within the second region and the end part of the strap will engage the periphery of the aperture.
2. A connection according to Claim 1 wherein the end of the strap is folded over twice to create said end part, the end part thus having three layers of strap.
3. A connection according to Claim 1 or 2 wherein the adjacent layers of strap are permanently fixed together by stitching.
4. A connection according to any one of the preceding Claims wherein the said adjacent layers are permanently fixed together only over a part of the overlying surface to define a free tab adjacent the main part of the strap, the free tab being adapted to be the component of the end part to engage the periphery of the aperture.

5. A connection according to any one of the preceding Claims wherein said region is connected to the rest of the aperture by a zone having a width less than the width of the strap.
6. A connection according to any one of the preceding Claims wherein a cover is provided adapted to cover the part of the aperture not occupied by the strap when the strap is in the second region.
7. A connection according to any one of the preceding Claims wherein the strap is connected to an inflatable element in the form of an inflatable side curtain.
8. A connection according to Claim 7 wherein the aperture is formed in the A-Pillar of the car body.
9. A connection substantially as herein described with reference to and as shown in the accompanying drawings.
10. Any novel feature or combination of features disclosed herein.